Weston & Sampson

westonandsampson.com

5 Centennial Drive
Peabody, MA 01960 (HQ)
tel: 978 532 1900

REPORT

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CITY OF
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MASSACHUSETTS

Draft Report

Fleet Management Evaluation

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INTRODUCTION / GENERAL OVERVIEW

Introduction

Weston & Sampson was hired by the City of Greenfield under a grant from MIIA to conduct a Fleet Management Evaluation of its Vehicle Maintenance (VM) operations. The objective of this study was to assess the adequacy of selected fleet management and operational areas so corrective action can begin to strengthen and/or improve the operation.

The objective of our assignment was to conduct a High-Level Assessment of *all* key aspects of the client's fleet support programs. It will provide a partial plan that will specify required refinements in those vehicular-related support operations.

The initial phase of work was directed at starting the project efficiently and effectively, finalizing and detailing the plan of work. A request was submitted to the City asking for pre-study data collection, and a time schedule to conduct onsite interviews with managers and mechanics. Once onsite, the consultant started to define the current operations and accompanying strengths and weaknesses in the fleet maintenance support areas. During this visitation, the consultants initiated cursory reviews of past operations to acquaint themselves with current operations. Once the consultants completed their observation, they again met with the Director discussing our findings and along with recommendations of areas that require more focus. Please note that our agreement included up to four (4) focus areas, however we addressed seven (7) areas as described further below.

The results of our review are based on information gleaned and compiled through interviews with senior department heads, administrative staff, and the employees that maintain the equipment. Due to the lack of a detailed Work Order (WO) system, we were not able to review its fiscal stability. We suspect there is cause for concern in that area. As a result, this study presents an analysis of process based on observation, workflow and an interview process held during the month of January 2017.

As a note to the reader, during the conducting of this study, we used the national standard or commented on "best in class" or "best in practice" as performance milestones for the organization to strive to attain. The performance measures presented have been established and tabulated from many well-run municipal fleet operations nationally in similar geographic areas and not just random samples of similar size fleets where the data has not been tested.

For the reader's clarification, we have used a number of acronyms or terms throughout the report. They are:

- ✓ VM – Vehicle Maintenance (operations group)
- ✓ WO – Work Order
- ✓ NAPA – National Automotive Parts Association
- ✓ AFS – Assistant Field Superintendent
- ✓ WSF – Working Shop Foreman
- ✓ ASE – Automotive Services Excellence
- ✓ VE – Vehicle Equivalencies
- ✓ PM – Preventive Maintenance
- ✓ VMIS – Vehicle Management Information System

- ✓ FMIS – Fuel Management Information System

General Overview

The general description of the Vehicle Maintenance (VM) operation will hereby be referred to as VM. All repairs and field service calls are performed either in or out of this shop under the direction of the Assistant Field Superintendent (AFS) and his Working Shop Foreman (WSF). The AFS reports directly to the Director of Public Works. The VM works Monday through Friday, utilizing one eight-hour shift with operational times, 7:00 AM to 3:00 PM.

The current staffing allocation in the shop is as follows:

One (1) AFS: Allocates half of his time to vehicle repairs and management. Other time is spent on management of the following functions: Solid Waste, Building Maintenance, Parts Purchasing, Specification development and other duties as they arise.
One (1) WSF: Allocates half time to vehicle repairs, while the other half of his time to parts and fleet management.
Four (4) ASE certified mechanics

Total allocation of service for fleet related work is as follows:
0.5 Full Time Equivalent from the AFS
0.5 Full Time Equivalent from the WSF
4.0 Full Time Equivalents from the ASE certified mechanics
5.0 Full Time Equivalents Total

The VM provides service to 192 pieces of equipment plus 40 smaller units and attachments all totaling 232.

The biggest "bottle neck" as we see it is the lack of:

- A fully structured WO system where ASE mechanics are not charging any labor hours for repairs;
- Fleet is subsidizing all labor cost for its customers;
- Standard maintenance repair codes are not being used;
- There are no shop performance monitoring tools;
- Mechanics are called upon to plow snow;
- Parts management is lacking;
- There is no supported vehicle replacement program;
- The fleet is old, and;
- Policies and procedures are lacking.

Corrective action of these and other areas should be the main focus should the City want to reduce operating cost and improve fleet availability. Nearly all of what we would consider "best in fleet practices" that would provide "real time" informational benchmarks are unable to be accomplished because the J.J. Keller "Encompass" fleet work order software is not currently being used to work as a

fully functional Vehicle Management Information System (VMIS). This inability to provide VMIS data collection is hindering shop productivity.

Although the public works facility is antiquated and in need of some renovations, our review of the fleet repair area indicated that the shop is sufficient to provide quality repairs.

1.0 STAFFING

1.1 Overview

Proper VM staffing is critical to the cost-effective delivery of services. If staffing levels are too high, operating costs will be high. If staffing levels are too low, mechanics will fall behind on scheduled services, while breakdowns increase at a dramatic rate. What results, are breakdowns that are more expensive and higher operating costs for the organization. It also promotes more downtime of the fleet and poor customer relations. As downtime increases, more parts are required, user departments demand more equipment, and the fleet starts to grow out of control in numbers and we refer to this as "fleet creep".

1.1.1 Finding

"Fleet creep" describes the condition when the growth in the number of fleet units takes over the operation. In our judgement, it has and will continue to escalate if the fleet age does not improve. The AFS and the WSF, are professionally dedicated in keeping up with the repair demands placed on them but we can say with certainty that the current staffing levels are sufficient to keep up with the daily demands placed on them. However, this will only continue if a stringent fleet replacement program is put in place and funded. If not, what will happen next is a term we call "management by crisis" where ASE mechanics will be responding to "breakdowns" with less and less time left to focus on preventive maintenance procedures. This is a common problem we see nationally when vehicle and equipment replacements are deferred.

In analyzing shop staffing, we typically assign the fleet operation a fixed number of VE for which they will be responsible. This serves to identify staffing levels estimated to be appropriate for the size of the fleet in question. Weston & Sampson has established a range for selecting the recommended number of VE after nearly sixty engagements geographically and demographically across the United States. We estimate the high side, 80 to 100 VE's per mechanic, as the foundation for the best in class and make certain staffing recommendations toward the lower end based off that count.

Dozens of issues that are often specific are used in the process of identifying the recommended staffing ratio for the fleet in question. Each of the following elements was used in the process of developing the recommended VE ratio(s) for the VM. While there is no set formula for raising, and lowering the ratio, decisions for developing the recommended VE ratio are made by the consultant assigned to the engagement based on experience and the elements listed.

Table1 – Vehicle Equivalency Elements

Element	Ratio Raised for Positive	Ratio Lowered for Negatives
The amount of outsourcing done	High level of outsourced work	Many labor-intensive tasks performed in-house
The facilities in which the technicians work	Very adequate facilities, supportive of the work performed	Inadequate facilities
Weather conditions	Moderate, temperate, little or no snow and ice	Cold, rain, snow and/or ice present
The type of vehicle considered "front line"	Most of the fleet vehicles are relatively uncomplicated	Complex systems, multiple axles, highly specialized
The availability of spare parts within the municipality	Many parts sources, parts often delivered same day	Travel to other communities to obtain parts is often required
The type of procurement policies that are in place for vehicles and equipment	Procurement of best-in-class models; procurement of vehicles that match the workload; attention to standardization; training is included; focus on warranties is strong	Procurement of lowest bidder; procurement of vehicles that inadequately match the workload; no attention to standardization; training is not included; warranty programs are not included/followed
The type of procurement policies that are in place for parts	Parts procurement decisions are made based on quality of parts and/or dealer recommendations	Aftermarket parts used; fabricated parts used; rebuilt parts used
The location of the fleet versus the maintenance facility	Co-located, staged at, or adjacent to the fleet maintenance facility	Distance from the fleet maintenance facility
The type of mileage put on the vehicles	Road access available, used predominantly on highway, miles are easy on the vehicles	Stop and go traffic, spurts of acceleration followed by brake application, idling time
Driving conditions	Paved streets, freeways, few traffic signals and stop signs	Potholes, jammed traffic, unusually long idling periods, off road, mud
Maintenance procedures - level of maintenance performed	Major component swap outs	Major component overhauls
The age of the fleet - replacement plans	Younger fleet based on strong and well-supported replacement plan	Aging fleet; older vehicles; procurement slippages prevail
Operator procedures - maintenance contributions made by the operators	Strong focus on first level maintenance, daily checks, maintenance reporting	Operators get in and go without routine daily checks
Focus on Preventive Maintenance	Strong focus on PM	Abundance of corrective maintenance
Type of Information System in use	Robust fleet management information system	Manual, partial, or non-dedicated fleet management information system
Quality assurance procedures	Strong commitment to QA	Little or no QA available
Staging Options	Warm [indoor] storage	Remote [outdoor] storage
User surveys	Strong feedback system in place	Little or no feedback available
Self-evaluation	Strong self-evaluation system in place	Little or no self-evaluation

Many other elements can exist that will have an impact on the VE estimate. The ones shown above are just a few representative examples. These examples, however, help describe the process.

For the elements shown above, the VE ratio can be raised if there are certain positive operational characteristics and can be lowered if certain negative operational characteristics exist. As such, establishing a VE total for the fleet is an exercise in statistical analysis—a mathematical process.

For example, a standard sedan is 1.0 vehicle equivalent and the typical two-ton truck rates 2.5 vehicle equivalents. This means that it takes about two and one-half times the labor effort to maintain a two-ton truck as it does to maintain a sedan. A backhoe is typically 6.0 VE, which means it takes approximately six times as much effort to maintain a backhoe as it does a sedan.

Recommendation #1

We mentioned earlier that the Vehicle Equivalent calculation has determined that there are approximately 232 pieces of equipment such as trucks, cars, air compressors to front-end loaders and fire apparatus. Within this count, there are multiple attachments such as plows, spreaders and mowers, all totaling 317 VE. Utilizing the "Elements for Criteria" listed above; the current operation is staffed slightly higher at 63.4 VE's for each ASE mechanic. We view this ratio as over-staffed as compared to other fleets nationally. See Table 2 below.

To adjust this ratio, we would suggest elevating the AFS to Superintendent, thus adjusting the manpower staffing from 5 to 4.5 and providing a VE ratio of 70.4 to one. This ratio is more in line with what we typically see. Given the need to correct many current operational conditions mentioned above, and by elevating the AFS to Superintendent, this will allow him to focus on resolving fleet issues and other global departmental issues.

Table 2 - VE Calculation

VE Calculation	Not Feasible	Best in Class	Great	Excess Staff
VE Count in the Fleet	317	317	317	317
VE Ratio to Each Mechanic	105.6	79.25	70.4	63.4
Number of Mechanics Required	3	4	4.5	5

2.0 WORK ORDERS / WORK SCHEDULING

2.1.1 Overview

The cost-effective utilization of in-house maintenance resources should minimize maintenance, increase repair turn-around time and decrease equipment downtime. Processes should be in place to improve scheduling work into the shop in advance and for performing minor repairs while the driver/operator waits. ***Service hours and scheduling processes should be flexible enough to accommodate vehicle user's work schedules.*** At the same time, they should also serve to maintain a steady flow of work to mechanics. The goal is to avoid the peaks and valleys (management by crisis) associated with unplanned service demands.

WO's should be created as soon as the vehicle is presented to the shop and be used to document all maintenance repair time at a fully burdened labor rate and report services accomplished, by vehicle. Preferably the WSF ***should estimate the time required to complete the work*** by referencing an appropriate flat rate manual, past experience or, once developed, an in-house time standard. This is not to insinuate that you should use flat rates to accomplish work, but use it as a tool to estimate the repair flow in the shop.

2.1.2 Findings

There is virtually no industry standard WO system, shop monitoring or total cost capturing system in place. The current WO is used more as a device to log parts and no labor is recorded. The data field in the VMIS includes the hourly rate for the ASE mechanic's time but remains unpopulated so there are no hours being charged to the customers. Thus, Public Works is subsidizing all labor to the customers of the VM. This results in no total cost reporting for the VM to compare themselves with private sector shops.

In addition, the Greenfield VM does not follow industry-standard shop monitoring procedures. As a result, the operation falls under "management by crisis," mode with little to no shop scheduling and fleet users arriving at the shop for maintenance only when breakdowns occur. This results in ASE mechanics continually working in a reactive mode, rather than doing preventive repairs in accordance with a planned schedule. Working in this manner typically leads technicians to failing to attend to administrative tasks such as opening work orders, documenting parts used and labor hours expended, etc. These problems are furthered by the ASE mechanics having to work on more than one vehicle at a time.

<u>Recommendation #2</u>

Implement a process to target a *scheduled* repair rate at 60 – 65 percent of all work that hits the VM that means that more than half of the work completed in the shop should be accomplished in a planned and *scheduled* manner.

Another important benchmark is fleet availability. This benchmark is a key measure of success in a fleet management program. It represents the degree to which the fleet maintenance organization is

able to ensure the regular availability of fleet units to the user departments. At any given time, there should be no more than 5% of the fleet down daily.

Recommendation #3

Eliminate the subsidization of repair labor to customers of the fleet. Develop a fully burdened labor rate (closer to $60.00 per hour) for the ASE mechanics. This rate should be applied to each repair based on the number of hours the ASE *mechanics report on the WO.*

Recommendation #4

Staffing in Greenfield does not currently support a second shift. Whenever possible, a second shift operation is recommended to repair vehicles and equipment during times when it is not needed by the user. parts supply and procurement

3.0 PARTS SUPPLY AND PROCUREMENT

3.1 Overview

The cost-effective and timely provision of high quality repair parts to the maintenance staff is another key element in the overall success of the VM. The organization of the parts supply function, the timely procurement of parts, parts inventory management, warehousing, and inventory control, each impact overall management success.

3.1.1 Finding

The VM currently has no formal parts policies or procedures.

The parts inventory was estimated at approximately $39,000, however no annual audit is conducted to comply with GASB 34. During the interview process, VM staff were asked basic parts-management questions, such as:

- What is the total value of the automotive parts inventory?
- How often do you do an annual or cyclical inventory count?
- What is the annual turn ratio of the inventory?

Staff were not prepared to provide these typical parts metrics due to the lack parts cost tracking using a VMIS.

Recommendation #5

Develop and implement a formal parts management system using a VMIS and conduct annual audits of the parts inventory in compliance with Government Accounting Standards Board 34 (GASB 34). Once the VMIS "Encompass" is updated, create bar coding, or similar method, to manage parts.

4.0 TRAINING

4.1 Overview

Mechanics in any municipal setting work on one of the most diverse and complex fleets in the nation. This is primarily true due to the specialized service deliveries municipalities provide to its constituents. To provide cost effective and timely repairs to this diverse fleet, training is one of the key elements for fleet maintenance success.

Most of us can vaguely grasp the amount of training experience necessary to fix our own personal vehicles. Without that training, our repair bills would be higher, and the repair would fall short of what we anticipated. Within any given mixed municipal fleet, mechanics work on a whole host of complicated and technical equipment, ranging from simple string trimmers, to cars, trucks, motor graders, front-end loaders and emergency fire apparatus and generators. Due to continual and accelerating changes in the automotive and construction equipment technology, a rigorous, proactive training program is essential for maintaining the viability of in-house fleet maintenance programs. Training investments yield dividends in effectiveness and efficiency, which translate into better, cheaper maintenance and repair services.

4.1.1 Finding

As compared to other municipal fleet operations, the current VE ratio is slightly out of line. This aging fleet alone can pose many problems in the future if not supported by a fully funded, annual replacement plan. What we feel has saved Greenfield thus far is that elected officials supported implementing a pay incentive program for ASE mechanics. We commend you on this important program, but keep in mind that funded vehicle replacement is paramount to keeping utilization of the fleet up and cost down.

Recommendation #6

A training budget of $1,000 per mechanic and the WSF should be established to improve the reporting and expanded use and training on the JJ Keller Encompass VMIS. This should be one of the main objectives of the Superintendent position, should that recommendation be implemented.

5.0 FUEL MANAGEMENT INFORMATION SYSTEM (FMIS)

5.1 Overview

Beyond the cost of the fleet assets, fuel is the largest cost element of any fleet operation. Furthermore, fuel management is crucial to the success of any solid preventive maintenance and the vehicle replacement program. All good FMIS's are designed to meet the following objectives:

- Improve the efficiency, utilization, fleet asset allocation, scheduling of preventive maintenance and control of fuel dispensing.
- Control theft of product.
- Automate the collection of and provide a method to transfer fuel usage information to the VMIS.
- Provide the appropriate reports to the users of the fleet.
- Integrate tank level monitoring and inventory control into the automated fuel system.
- Integrate vehicle diagnostic information to the fueling system.
- Newer systems integrate solutions for Global Positioning System (GPS) data. Tire Pressure Management System (TPMS) can be established through the Automated Fuel System.
- Interface to 3rd party software and hardware applications.

5.1.1 Finding

The fuel is dispensed and managed by a Fuel Master automated FMIS. Fuel is charged back to each user however, no administrative price is marked-up to cover the management of the system. Due to aging infrastructure, and avoiding violations, the dispensing and fuel management operation is going to be outsourced to Sandri Energy.

Recommendation #7

Contractual service that will be provided by Sandri Energy will have to work in concert with the Encompass fuel management import data field. It will need to automatically pull data with real-time updating. Update the current FMIS with odometer and/or hour meter statements. Preferably the fuel data should be transferred electronically into Encompass through a Phoenix report writer or equal. This is done so fuel and oil consumption, fleet utilization, and the preventive maintenance program can be improved. By utilizing this technology monitoring and report generation capability, the WSF time could be put toward more productive use.

6.0 FLEET REPLACEMENT PLANNING

6.1 Overview

Many fleet professionals and government decision makers confuse fleet replacement planning with procedures used to select which vehicles should actually be replaced. Fleet replacement planning is a strategic activity designed to predict replacement funding needs. Fleet assets can be replaced in a planned and rational manner before undesirable operating impacts occur, such as high repair costs and disruptions in service delivery activities caused by vehicle breakdowns. Choosing which vehicles should actually be replaced is a tactical activity, with the goal to spend allocated funds in the most beneficial manner by selecting the vehicles that "deserve" replacement.

6.1.1 Findings

Based on our observations, Greenfield lacks a formal structured replacement planning procedure and this is a significant concern. The City's current procedure is to replace vehicles and equipment based on age in years. However, it is also obvious that this procedure is not followed, as evidenced by the fact that some units in the fleet have exceeded their projected life and repair costs are likely exceeding purchase price. As in many municipalities, Greenfield included, budget constraints have caused decision-makers to defer vehicle and equipment replacement to fund other competing needs. Replacements have been deferred, resulting in increased operating costs and decreased service levels, and Fleet Creep. In general, the process of Fleet Creep involves the following stages:

- Assets are deferred
- Warranties expire
- Fleet age grows older
- Fleet is less reliable due to age
- Parts costs escalate
- As new units are purchased, users are reluctant to give up old due to unreliable prime equipment
- Parts become harder to get due to fleet age
- More maintenance space is required
- Fleet downtime escalates (units waiting on parts)
- Users again keep more old units
- Fleet growth in numbers increases (Fleet Creep)
- ASE mechanics can't keep up with demand
- Fleet downtime continues to escalate
- Morale of both ASE mechanics and users declines
- Customer service levels drop

It was also noted in the interview process that fire apparatus is being purchased in a non-conforming substandard we typically see in other municipalities. This is being done because the current fire station is antiquated and too small to accommodate standard manufacturers' production models. More succinctly, station entrance doors are too narrow, lack door height and are not sufficient length to accommodate current production models. The practice of specifying the apparatus to fit the station

house might be costing the City more money than upgrading the fire station over the long term. More importantly, purchasing modified apparatus may not be providing maximum firefighting capability versus standard production models. To help belter understand, it is like purchasing a current day sedan and modifying it to fit in a "Model T" garage.

Recommendation #8

Develop a structured vehicle replacement planning procedure. In most fleet operations, 10% of the replacement value of a proactive fleet is set aside annually to fund the program. As cost data on the fleet becomes easier to collect and more valid, expand on the replacement planning process by adjusting the two major components: (1) replacement planning parameters that determine when each vehicle and piece of equipment should be replaced; and (2) a financing and funding process to ensure money is available to purchase a replacement when that date is reached. A clear distinction needs to be drawn between the (strategic) replacement planning and funding process, and the (tactical) process for selecting specific units to be replaced. Replacement cycles are planning parameters, and as such, are predictive criteria used to establish funding requirements. While they are also often used to identify potential candidates for replacement, additional factors need to be considered when developing the list of units – in priority order – that need replacement. These additional factors include, but are not limited to maintenance and repair costs, reliability, type of or applicability of actual use, frequency of use, and vehicle condition.

The fine-tuning of a systematic vehicle replacement program will provide the VM with more stable and predictable operating costs, a safer fleet, increased user satisfaction, improved vehicle reliability, a potential reduction in fleet size, and increased accountability for total fleet related costs. It also keeps the political process out of fleet replacement.

The primary objective of a formal replacement plan is to project aggregate, long-term, fleet replacement costs to ensure that sufficient funds are recovered to defray these costs. Similar to the VM, securing adequate funds to ensure the timely replacement of vehicles and equipment continues to be the biggest obstacle facing most fleet organizations in these economically challenging times.

Based on our discussions, we understand that the Fire Department is looking to improve their fleet replacement program. Provided below are two example replacement guidelines that can be used for Fire Engines/Units. These guidelines are taken from the APWA Planned Fleet Replacement Guide, July 2012 and the Fleet Replacement Challenges Equal Opportunities article by Brian Brown, Fire Apparatus Magazine, June 4, 2013. The two methods described consist of a Point Replacement System (Most Common Method) along with Benchmark Replacement Criteria, as described further on the next page.

Table 3 - Sample Replacement Point System
(Most Commonly Used Method)

Factor	Points		
Age	One point for every year of chronological age, based on in-service date, with adjustments based on service class.		
Miles/Hours	One point for each 10,000 miles or 1,000 engine hours of use.		
Type of Service	One, three, or five points are assigned based on the type of service the unit is exposed to. For instance, fire pumpers would be given a five because it is classified as severe duty service. In contrast, an administrative sedan would be given a one.		
Reliability	Points are assigned as one, three, or five depending on the frequency that a vehicle is in the shop for repair. A five would be assigned to a vehicle in the shop two or more times per month on average, while a one would be assigned to a vehicle in the shop an average of once every three months or less.		
M&R Costs	One to five points are assigned based on total life M&R costs (not including repair of accident damage). A five is assigned to a vehicle with life M&R costs equal to or greater than the vehicle's original purchase price, while a one is given to a vehicle with life M&R costs equal to 20 percent or less than its original purchase cost.		
Condition	This category takes into consideration body condition, rust, interior condition, accident history, anticipated repairs, and so on. A scale of one to five points is used with five being poor condition.		
Point Ranges	Fewer than 18 Points	Condition I	Excellent
	18 to 22 points	Condition II	Good
	23 to 27 points	Condition III	Qualifies for replacement
	28 points and above	Condition IV	Needs immediate consideration

Table 4 - Benchmark Replacement System (Alternate or Supplementary Method)

Use the benchmarks listed below to help develop a fleet replacement policy.

Purpose: The Replacement Class System and Replacement Guidelines are used to define practical criteria and guidelines for replacing fleet units and are applied in fleet unit life cycle projections. The replacement guidelines outlined in this policy generally reflect operational, technological, downtime, and financial criteria.

Life Cycles: Fleet unit life cycles are based on the best practice method recommended by industry standards. This method involves an internal customer survey and using replacement guidelines set forth in the vehicle replacement guide in most fleet software programs. The results are compiled and adjustments are made to take into account factors unique to a fleet such as type of use. Once the vehicle has met the replacement criteria, it goes through a review process by the fleet manager/director and the user department to determine if the vehicle should be replaced, retained for limited use, or have its life cycle extended. The overall goal is to replace vehicles at the lowest life cycle cost before the operating cost exceeds vehicle capital.

Replacement Class System: The Replacement Classes and Replacement Guidelines are used to categorize the various types of fleet units and their target replacement miles, hours, and age in addition to each unit's operational feasibility while analyzing the most current technology.

Consideration for Replacement
- Units that have met replacement criteria
- Units with replacement deferred from prior years
- Units that have reached maximum points or fleet software replacement program criteria
- Units that have excessive operating cost

Staff Vehicles Seven to 10 years or 85,000 to 100,000 miles*

Engines Aerials 10 years front-line and three to five years reserve service*

Medic Units Seven years front-line and three years reserve service*

Type III and Type VI Wildland Units 20 to 25 years or as needed*

Tenders, HazMat, other Specialty Units As needed*

*As needed and based on the replacement criteria outlined above.

Excellent Condition
- Fewer than five years old
- Fewer than 800 engine hours
- Fewer than 25,000 miles if not used in stationary applications
- No known mechanical defects

- Very short downtime and very little operating expense
- Excellent parts availability
- Very good resale value
- Meets all present NFPA 1911 safety standards

Very Good Condition
- More than five but fewer than 10 years old
- More than 800 but fewer than 1,600 engine hours
- More than 25,000 but fewer than 50,000 miles if not used in stationary applications
- No known mechanical or suspension defects present
- Short downtime and above average operating costs
- Good parts availability
- Good resale value
- Meets NFPA 1911 safety standards

Good Condition
- More than 10 years but less than 15 years old
- Some rust or damage to the body or cab
- More than 1,600 but fewer than 2,400 engine hours
- Some existing mechanical or suspension repairs necessary
- Downtime and operational costs are beginning to increase but not terribly above the average
- Parts are still available but getting difficult to find
- Resale value decreasing
- Meets all NFPA 1911 safety standards

Fair Condition
- More than 15 but fewer than 20 years old
- Rust, corrosion, or body damage apparent on body or cab
- More than 2,400 engine hours
- More than 75,000 but fewer than 100,000 miles if not used in stationary applications
- Existing mechanical or suspension repairs necessary
- Downtime is increasing, and operational costs are above the historical average
- Parts are becoming harder to find and/or obsolete
- Very little resale value
- Does not meet all NFPA 1911 safety standards

Poor Condition
- More than 20 years old
- Rust, corrosion, or damage to the body of cab impacting apparatus use
- More than 2,400 engine hours or 100,000 miles
- Existing mechanical or suspension problems affecting the apparatus operation
- Downtime is exceeding in-service availability
- Operational costs are exceeding the resale value of the apparatus
- Parts are obsolete
- Does not meet all NFPA 1911 safety standards.

Recommendation #9

Define an excessive damage policy for directly charging intentional, excessive or clearly preventable damage. While this practice may seem unacceptable to current users, having a clear policy in place and tracking the revenue from these charges separately, will serve as a tool for improved budgeting and an incentive for users to reduce damages.

Recommendation #10

Formalize replacement planning and use of replacement funds. The inflationary factor should be evaluated for effectiveness on a regular basis, perhaps every three years. The hourly equipment replacement funding mechanism should be reviewed for effectiveness and alignment with the monthly equipment model. In addition, the VM should determine whether replacement funding should be segregated from operational funds. When utilizing the segregated approach, users are charged an hour per mile rate for each class of vehicle, one for operation and another for depreciation. This approach tends to discourage users from micromanaging invoices, and quibbling over high costs for particular repairs from the VM. What users see is a steady, on-going charge based on utilization instead of technician billings for parts and labor.

Recommendation #11

Do not defer fleet replacement purchases. This is an important recommendation, so to reiterate the "findings" in this section of the report, deferring fleet replacement applies tremendous pressure to the fleet maintenance infrastructure. Additional maintenance space, additional technical staff, and additional maintenance dollars increase while vehicle downtime and reduced worker productivity are seen. What results is the current, chronic maintenance issues discussed above along with the significantly inflated fleet size. The City is charged with providing services to taxpayers. Having a vehicle down for maintenance does not eliminate the need to deliver promised services in a timely manner. As vehicles become less dependable, they incur more unscheduled maintenance, and spend longer periods in the maintenance shop. The departmental supervisors look for solutions to keep their employees productive. One such solution is to retain vehicles as they are replaced rather than permitting them to be retired. As mentioned, this provides the needed backup or spare vehicle. The City has taken action that once a vehicle is replaced in the fleet, one has to be turned in. Although this sounds good in theory, departments rarely turn in a similar vehicle; rather, they look for a dissimilar or a "sacrificial" vehicle that they dispose of instead.

Even the best replacement planning efforts will fail if the appropriate funding to renew the fleet is not available. ***It is important to recognize that a dollar of fleet replacement funding deferred, is not a dollar saved.*** Fleet assets wear out. Over time, they not only become more unreliable, but more costly and unsafe to operate.

Recommendation #12

Avoid the purchase of "Low Bid" purchases whenever possible. "Low Bid" sets the stage for de-standardized vehicles, increased standard parts inventory, and decreased ease of maintenance and operation. An analogy of "low bid" is, if you needed a heart transplant, would you accept the low bid?

Modern equipment is complicated and you need to purchase the best item that will provide productivity while being cost effective.
Consider purchasing vehicle and construction equipment through the use of the National Joint Powers Alliance (NJPA). NJPA offers a new way for government and private sector agencies to purchase vehicles, equipment, parts and services. NJPA utilizes the power and value of national contract purchasing and is focused on providing efficient public service through their national cooperative purchasing programs. NJPA is a national organization that creates a business and service alliance between buyers and suppliers. The NJPA is a Service Cooperative created by Minnesota Statute 123A.21, adopted in 1978 and revised in 1995, to allow participating governmental and municipal agencies to reduce the cost of purchased goods by leveraging their combined purchasing power. They are a member-owned cooperative, serving all public and non-public educational systems, governmental agencies, and non-profits. NJPA establishes and provides nationally leveraged and competitively solicited purchasing contracts in cooperation with the Uniform Municipal Contracting Law, M.S. 471.345 Subd.15 and is enabled by M.S. 471.59 (The Joint Powers Law). Most of the states have enacted their version of the "Joint Powers" law. Each member (membership is free) is responsible to review the laws in their state, to determine their ability to procure goods and services through the contracts provided by NJPA. NJPA has contracts in place for equipment manufacturers and vendors such as:

- NAPA Auto Parts
- Caterpillar
- Bobcat
- Vermeer
- Case IH
- LeeBoy
- John Deere
- Kubota
- Grainger

NJPA has contracts in place for Fleet Management Technology such as:

- Trimble
- FuelMaster
- INVERS
- AssetWorks
- Federal Contracts Corp

Recommendation #13

Develop an in-house birth certificate form that identifies the Original Equipment Manufacturers (OEM) replacement part number for all parts likely to be replaced in the first five years of the unit's life. This form is not to be confused with the equipment line setting ticket that the manufacturer provides with a new vehicle. This form should be completed by the successful vendor bidding the equipment. The main purpose for this certificate is so parts can be ordered and stocked for the more typical fast moving parts, creating a working inventory before the unit is even delivered. Items that should be listed are: oil filters, fuel filters, air filters, wiper blades, serpentine belts, alternators, starters and others. An

example of the important need for this recommendation is: The City operates a non-standard fleet especially Fire and many of the parts may look alike, but may not fit other manufacturer's equipment.

7.0 VEHICLE AND EQUIPMENT DISPOSAL

7.1 Overview

Once vehicles and equipment reach the end of their useful life, procedures should be in place to remove the asset permanently from the fleet. These procedures should aim to maximize residual value and avoid ***unauthorized retention*** of assets, including those that have been replaced. A decision must also be made regarding disposal, because all vehicles have some salvage or residual value. Even a vehicle that has been ruled as a Total Loss by an insurance carrier has value from the parts that were not damaged. Therefore, once vehicles have been replaced and/or removed from service, it should be the responsibility of the fleet operation to dispose of the vehicles (turn the vehicles into cash), and as ***quickly*** as is reasonably possible.

Vehicles lose value each day they sit idle pending sale. Commercial fleet leasing companies have a performance measure that they monitor closely called "days-to-sale". They know that each day a surplus vehicle remains on its books, represents an asset that is not earning money for them, but losing value. One of the biggest mistakes that municipalities make is conducting/participating in a once-per-year auction for disposal of all of these assets. An asset may lose substantial value between the time it is retired and the date of the annual auction.

The value derived at the time of vehicle resale, is an incentive to the using organization to keep the vehicle clean and properly maintained – but only if the organization is the beneficiary of the proceeds from the sale. Government fleets are no different. The organization should be entitled to use the credit from the timely disposal of well-maintained vehicles to offset the full cost of replacement vehicles.

Once a vehicle is replaced and a new unit is put into service, the replaced vehicle should be taken out of service and ***disposed of as quickly as possible***. This provides maximum salvage value and prevents Fleet Creep due to retention of replaced vehicles. There are several methods available for disposing of vehicles and equipment. They include, but are not limited to:

- Auctions: Over the past several years, auctions have been one of the most common methods used by public entities for disposing of fleet assets. By the very nature of the process, auctions attempt to solicit the highest price for an asset. Auctions provide a quick solution to disposing of assets. It is relatively simple for an organization to conduct an auction or hire an auction service to conduct the sale. The drawbacks to the auction approach include:
    - The typical delay between the time the asset is taken out of service and the time it is finally sold.
    - Auction fees typically are based on a percent (5-10%) of the auction proceeds and can significantly reduce the total revenues if a large number of vehicles are sold.
    - Auctions do not guarantee the sale of an asset.
    - The owner must settle for the auctioneer's wholesale price when higher prices might have been obtained by selling the vehicles as individual units or as small groups.
- Trades: Another popular method of disposing of old units is to offer them as a trade-in on the new unit being purchased. Vendors view the unit and submit a quote as a trade-in that offsets

the new vehicle's purchase price. The benefit of this approach is a simple disposing of the used asset. When using this method, an organization should always use language in the bid document that allows it to accept or reject the trade-in offer, if the fleet organization believes that it can obtain a better price elsewhere in the market.

- Buy-Backs: A seldom-used approach is to negotiate with the original equipment manufacturer to buy back the unit after a certain amount of time in service. This approach works well with construction equipment such as loaders and backhoes. Vendors receive a substantial discount for selling a unit to a government or other not-for-profit entity. The vendor can buy back the same unit a year or two later and sell it to the general public for a higher price than it was originally sold for (to the non-profit agency). The problem with this method is that it is only available occasionally and the number of vendors participating is limited.

- Direct Sales to Outside Individuals: Another method is to sell the asset directly to individuals or private organizations through direct sales. This approach is similar to the procurement process, where a notice of sale is provided to the public, usually through print media outlets, and bids for the specific unit are solicited. This method can be successful in obtaining high salvage proceeds, but the cost and level of effort associated with this method are also high.

- Employee Sales: One method is to offer the out-going units to employees at reasonable market value. This method has two distinct advantages – it can create a positive attitude among employees when perceived as a "fringe benefit", and it can also ensure the quick disposal of vehicles and equipment. The disadvantage of this approach is that vehicles are sometimes over-maintained and too much time, effort, and money is spent ensuring the unit is in favorable condition prior to disposal. It can generate negative reaction from taxpayers if they perceive an undue benefit for the City employees.

- On-line Sales: One of the newest and fastest growing methods of disposing of obsolete units is through the Internet.

7.1.1 Findings

Based on our interviews, the VM has not been diligent about disposing of aging vehicles and equipment in a timely manner. Units are often stockpiled and or traded in.

Recommendation #14

Re-engineer the fleet asset disposal process by using an Intranet disposal tool, such as the one available from www.GovDeals.com, or other governmental websites, which can offer up to 20% greater sale proceeds over conventional disposal methods. Online sales are relatively simple through websites such as these.

Recommendation # 15

All proceeds from vehicle and equipment sales should **go to the vehicle replacement fund**. The resale value of the replacement **is a portion of the overall purchase price of the unit and those revenues should be used to fund future replacements.**